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GB 0802335

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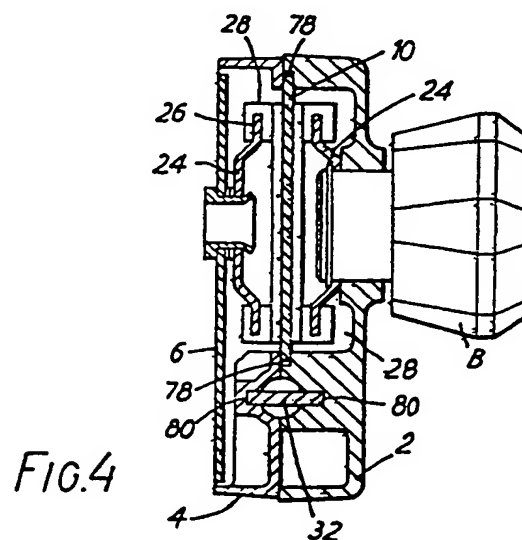
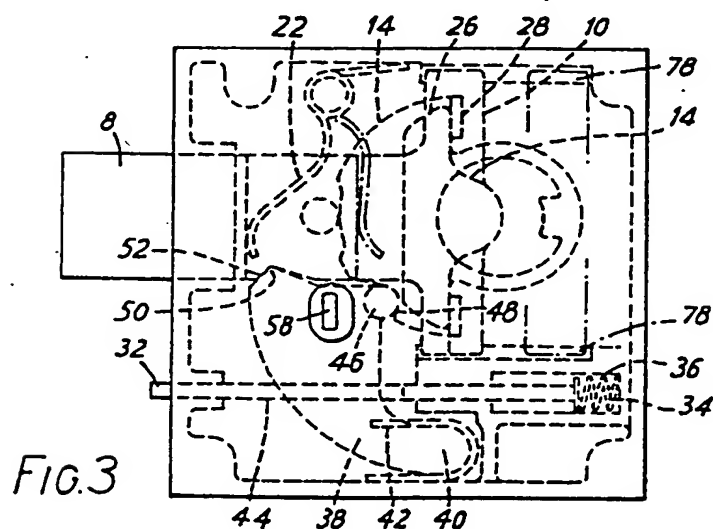
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(54) Latches

(57) A deadlocking latch comprises inner and outer die-cast parts (2, 4) within which is mounted a latch bolt (8) and a deadlocking bar (32). Guide channels in the inner and outer casing parts engage the latch bolt itself. The bolt is further supported and guided by a tee piece (10) fixed to its rear and engaging in guideways (78) in the casing parts. Guideways (80) are also provided in the casing parts for the deadlock bar. All the guiding faces (78, 80, 82, 82a) are integrally formed as cast-in channels in the inner and outer casing parts.



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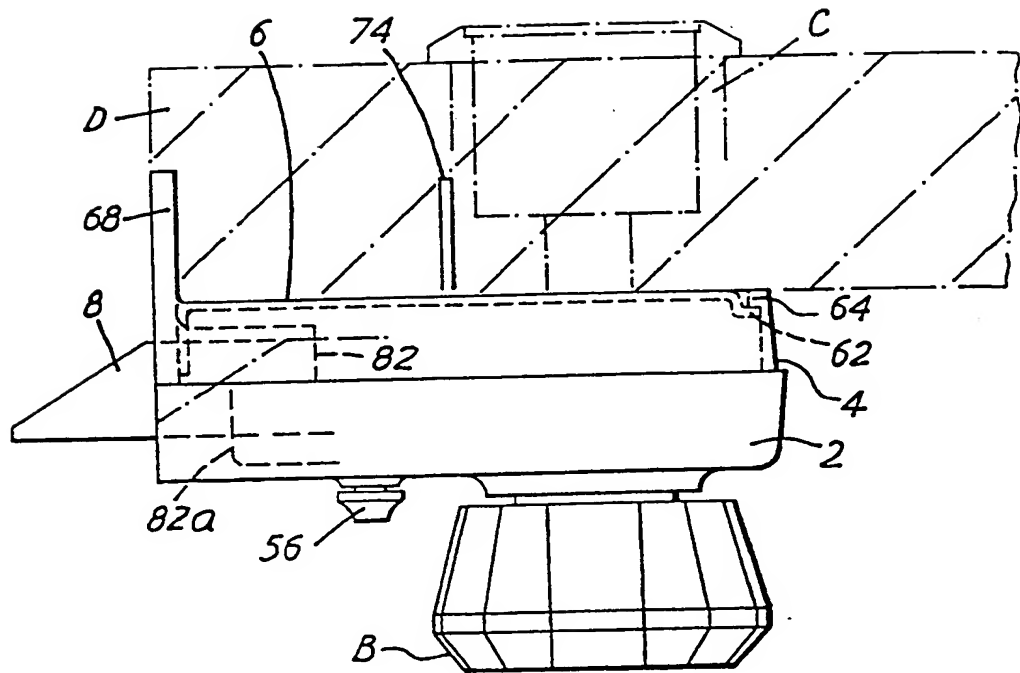


FIG. 1

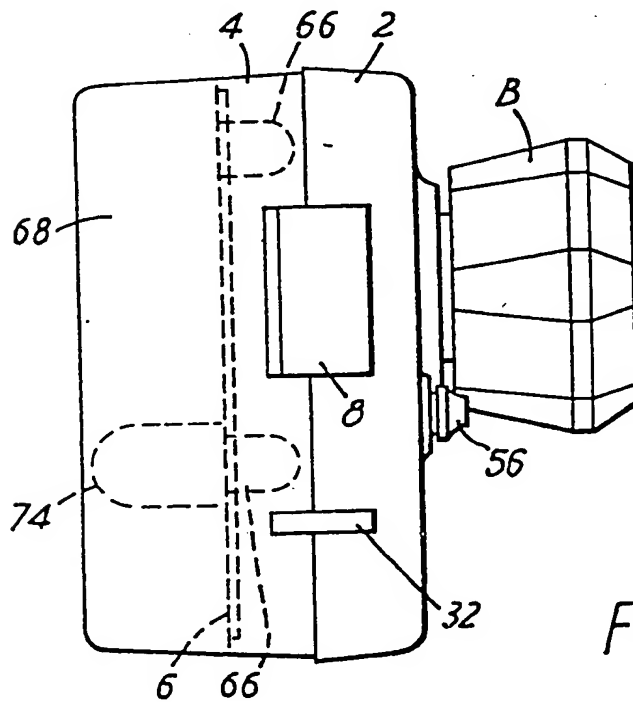
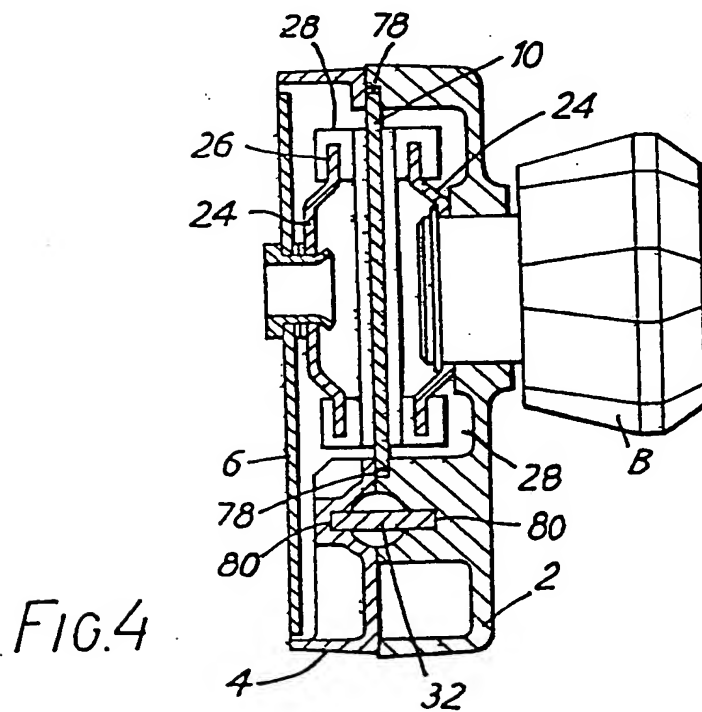
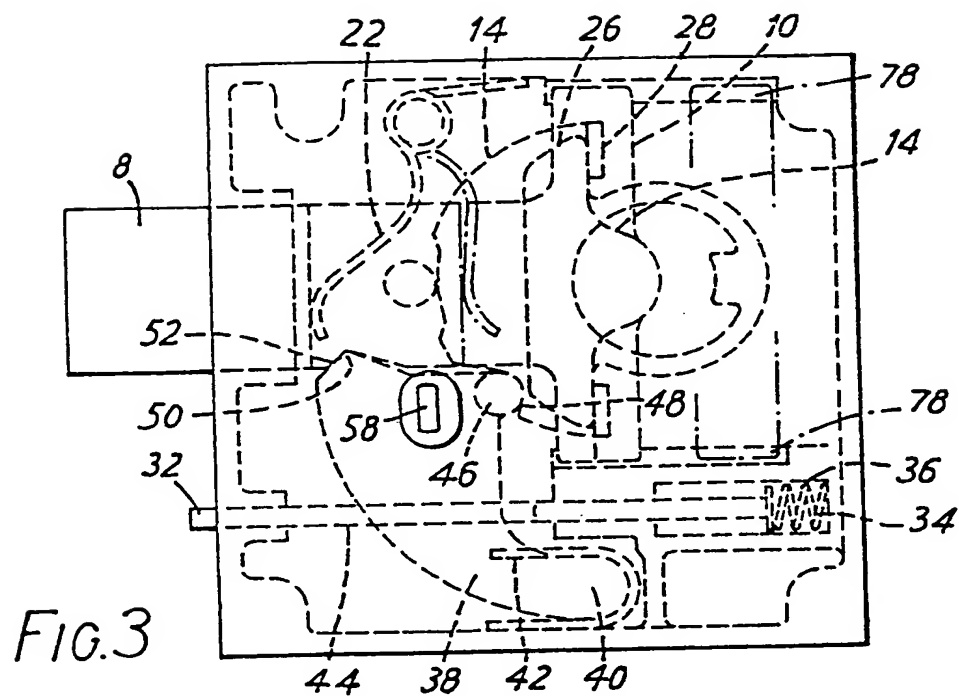


FIG. 2



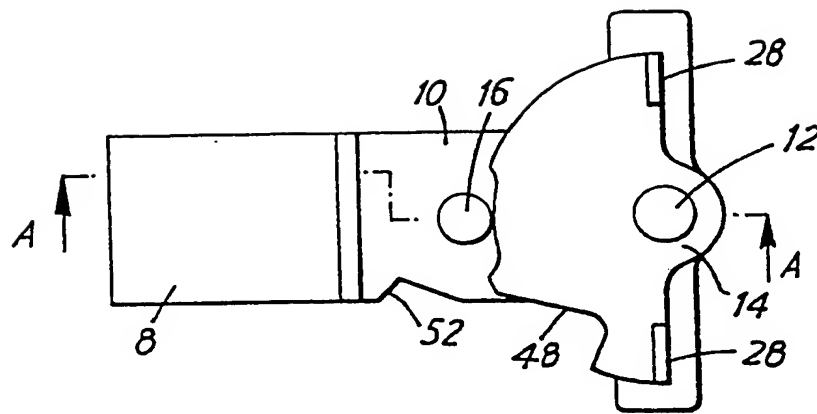


FIG. 5

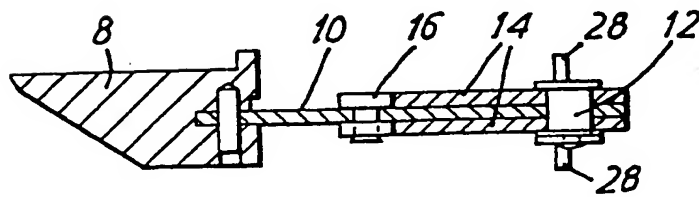


FIG. 6

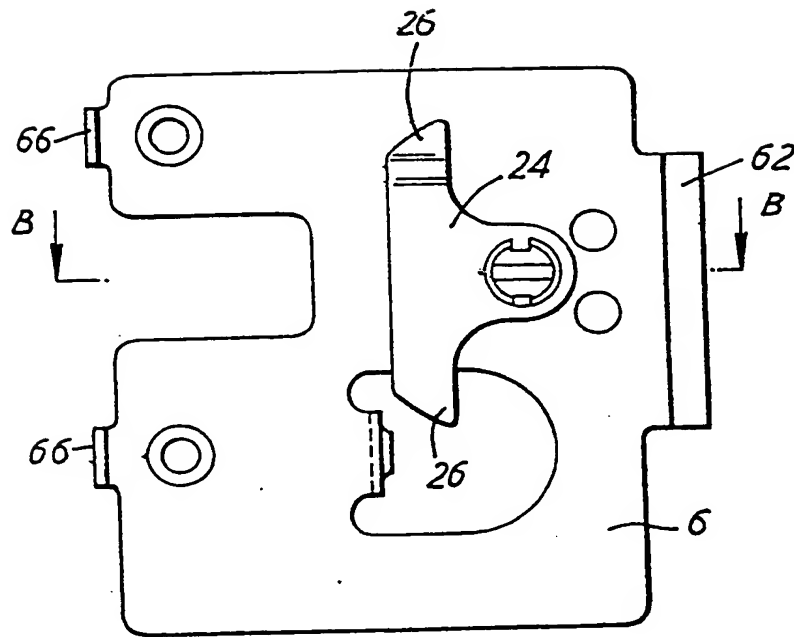


FIG. 7

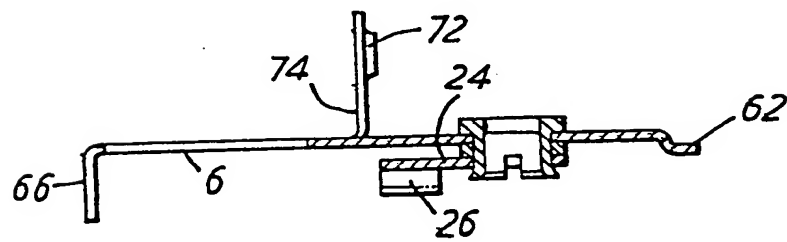


FIG. 8

SPECIFICATION

Latches

5 This invention relates to deadlocking latches.

According to one aspect of the invention, there is provided a deadlocking latch comprising a latch bolt guided in a casing to be moveable between a retracted position and a forward position in which it projects from the casing, said latch bolt being rigidly secured to or integrally formed with a rear guide member comprising at least one projection transverse to the direction of sliding movement of the bolt and engaged by guide means within the casing.

It is conveniently arranged that said bolt is retracted by an external operating member acting on an intermediate element having a mounting fixed relative to the latch bolt but permitting limited relative movement between said element and the bolt, whereby during said rotation movement the intermediate element can release a deadlock on the bolt, and then move with the bolt to retract it. For example, the element may be pivoted on said rear member which is provided with means that restrict the angle of pivoting movement.

According to another aspect of the invention, there is provided a deadlocking latch having a casing comprising inner and outer parts secured together and an innermost or rear member through which said inner and outer parts are mounted on a door or other support, said inner and outer parts being abutted together and holding between them a latch bolt assembly and a deadlocking element, guide faces for the movement of at least the latch bolt assembly being provided in both said casing parts.

Advantageously said guide faces for the latch bolt assembly are formed by open channels in the respective casing parts or at least the inner of said parts. If the latch bolt assembly is urged forwards by a spring within the casing, the guide channel of the inner casing part may be extended to overlap the space for movement of said spring in the direction of bolt movement if the spring is offset from said guide channel, being mounted for example in the outer casing part.

An example of the invention will be described in more detail with reference to the accompanying drawings, in which:

55 Figs. 1 and 2 are plan and front views of a latch according to the invention,

Fig. 3 is a side view of the latch illustrating the internal mechanism,

Fig. 4 is a vertical sectional view in the plane containing the operating knob axis,

60 Figs. 5 and 6 show the latch bolt assembly in side view and on the section line AA respectively, and Figs. 7 and 8 show the back cover assembly in side view and on the section line BB respectively. The drawings illus-

trate a latch with a casing made up of outer and inner die-cast parts 2, 4 held together by screws hidden from the exterior, and a pressed metal back cover 6 fitting in the open inside face of the inner casing part. The latch is shown mounted on the inner face of a door D to be operated by cylinder lock C on the exterior or by a hand knob B on the interior.

70 Mounted within the inner and outer casing parts is a latch mechanism comprising a latch bolt 8 slidable to and from the projecting position shown in which it will engage in a keep (not shown). The latch bolt is rigidly secured to a rearwardly projecting tee piece 10 and on a common pivot 12 at its rear end cam plates 14 are mounted on both sides of the tee piece in a symmetrical manner. The tee piece carries a riveted stop peg 16 that locates in an arcuate recess 18 in each cam plate to limit its pivoting movement.

The latch bolt is normally held in its extended position by a spring 22 inside the casing but can be retracted by followers 24 pivotally mounted on a common axis on the outer casing part and the back cover to engage the respective cam plates facing them. The back cover follower is rotated by the cylinder lock C when the door is to be opened from the outside, while the outer casing part follower is rotated by the knob B. The followers are oppositely handed, each having a pair of cranked wings 26 that are engageable with lugs 28 on the adjacent cam plate. If either follower is rotated in either direction, whether by key operation or by use of the interior knob, the associated cam plate is also rotated until prevented by the stop peg 16, whereupon continued rotation of the follower draws the bolt 8 back.

105 The lock mechanism further includes an automatic deadlocking bar 32 which is biased by a spring 34 held in a pocket 36 to project out of the casing. Associated with the bar is a lever-form detainer or detent 38 mounted on a pivot 40 in the casing with a spring 42 urging the detainer clockwise about its pivot axis. The detainer passes through a slot 44 in the deadlocking bar somewhat longer than the width of the lever at this region and at its upper end remote from the pivot the detainer has a pin 46 on its rear edge which can seat in recesses 48 in both cam plates, while on its forward edge is a nose 50 which can seat in a recess 52 in the forward part of the tee piece.

120 The deadlocking bar spring 34 is chosen to be stronger than the detainer spring 42, so that while the door is open the bar is normally extended by the spring 34, leaving the bar 32 projecting from the casing and the rear edge of the slot being brought forwards to hold the detainer 38 pivoted to a lower position in which it is clear of the latch bolt and tee piece. If the door is then slammed, both the latch bolt and the deadlocking bar are first

pushed inwards as they come to the door jamb, against their springs 22, 34, with the result that the detainer is no longer held by the deadlocking bar and is pivoted upwards by its spring. As the slamming movement is completed and the latch bolt springs outwards into the lock keep, the nose 50 of the detainer therefore engages in the recess 52 and holds the bolt extended into the keep. The force of the spring 34 on the deadlocking bar cannot lower the detainer because of the blocking action of the latch recess 52. The latch is thus deadlocked.

When the latch is opened, by use of the lock cylinder or the hand knob, one or other of the followers pivots its associated cam plate before the latch assembly begins to be urged back, and in this first movement the cam plate recess 48 slides over the detainer pin to lower the detainer and so permit the latch bolt to be retracted.

If the latch is to be rendered inoperative, the user can raise a nib 56 sliding in a vertical slot 58 in the outer casing face to bring it towards the latch bolt while that bolt is retracted into the casing. This brings a detent (not shown) into abutment with the tee piece 10 to hold the latch bolt in its retracted position.

In fixing the latch on the door, the inner and outer casing parts 2, 4 are already secured together and contain the lock mechanism. The separate back cover 6 is fixed by screws to the face of the door and the inner and outer casing assembly is then mounted on the back cover, a flange 62 of the cover engaging a rim 64 of the inner casing and two lugs 66 of the back cover locating in spaces in the inner casing. A front flange 68 of the inner casing lies in a rebate the edge of the door and securing screws 70 pass through it into the door, one of the screws also engaging a tapped hole 72 in a lug 74 of the back cover for added security.

One feature of the assembly described is the unitary latch bolt assembly comprising the tee piece 10 rigid with the latch bolt 8. The arms of the tee piece, against which the cam plates rest, are held in guideways 78 formed between the inner and outer casing parts and thereby give added strength and rigidity to the mechanism. The guideway for the deadlocking bar can be conveniently formed between the two casing parts also, in the illustrated example as slots 80 in the respective parts. The rigidity of the construction and its resistance to attempts to force open a door when locked by the latch is also improved by the provision of an extended guide channel 82 for the latch bolt in the inner casing part; the extent of the channel 82 can be compared with the shorter guide channel 82a in the outer casing part for the other side of the latch bolt, where a clearance must be provided for the spring 22. Because there are

separate inner and outer casing parts between which the bolt is held, this lengthened guide can be provided in the die casting without using a complicated cored mould.

Many modifications are possible within the scope of the present invention. For example, the pivoting cam plates can be replaced by linearly slidable members, and other forms of deadlocking mechanism can be employed.

CLAIMS

1. A deadlocking latch comprising a latch bolt guided in a casing to be movable between a retracted position and a forward position in which it projects from the casing, said latch bolt being rigidly secured to or integrally formed with a rear guide member comprising at least one projection transverse to the direction of sliding movement of the bolt, said member being engaged by guide means within the casing.

2. A latch according to claim 1 wherein said rear member projects transversely in opposite directions with respect to the bolt.

3. A latch according to claim 1 or claim 2 wherein an intermediate element is arranged to be acted on by an operating member to retract the bolt, said element having a mounting fixed relative to the latch bolt but permitting limited relative movement between said element and the bolt, whereby during said relative movement the intermediate element can release a deadlocking member securing the latch bolt and at the end limit of said relative movement can retract the bolt.

4. A latch according to claim 3 wherein the intermediate element is pivoted on said rear member of the bolt, means being provided to restrict the angle of pivoting movement.

5. A latch according to claim 4 wherein said rear member is in the form of a tee piece secured to the bolt with the cross bar of its tee form rearmost.

6. A latch according to claim 4 together with claim 5 wherein the intermediate element is pivoted on the centre bar of said tee form.

7. A deadlocking latch having a casing comprising inner and outer parts secured together, and an innermost or rear member through which said inner and outer parts are mounted on a door or other support, said inner and outer parts being abutted together and holding between them a latch bolt assembly and a deadlocking element, guide faces for the movement of at least the latch bolt assembly being provided in both said casing parts.

8. A latch according to claim 7 wherein the latch bolt assembly comprises a transversely projecting guide member, at least one transverse extremity of which is located by said saw guide faces.

9. A latch according to claim 7 or claim 8 wherein said guide faces for the latch bolt assembly are formed by open channels in the

respective casing parts, or at least the inner of said parts.

10. A latch according to claim 9 wherein the latch bolt assembly is urged forwards by a spring and a guide channel in the inner casing part for the bolt head overlaps a space provided in the outer casing part for movement of said spring in the direction of bolt displacement.

11. A latch according to any one of claims 7 to 10.

12. A deadlocking latch constructed and arranged for use and operations substantially as described herein with reference to the accompanying drawings.

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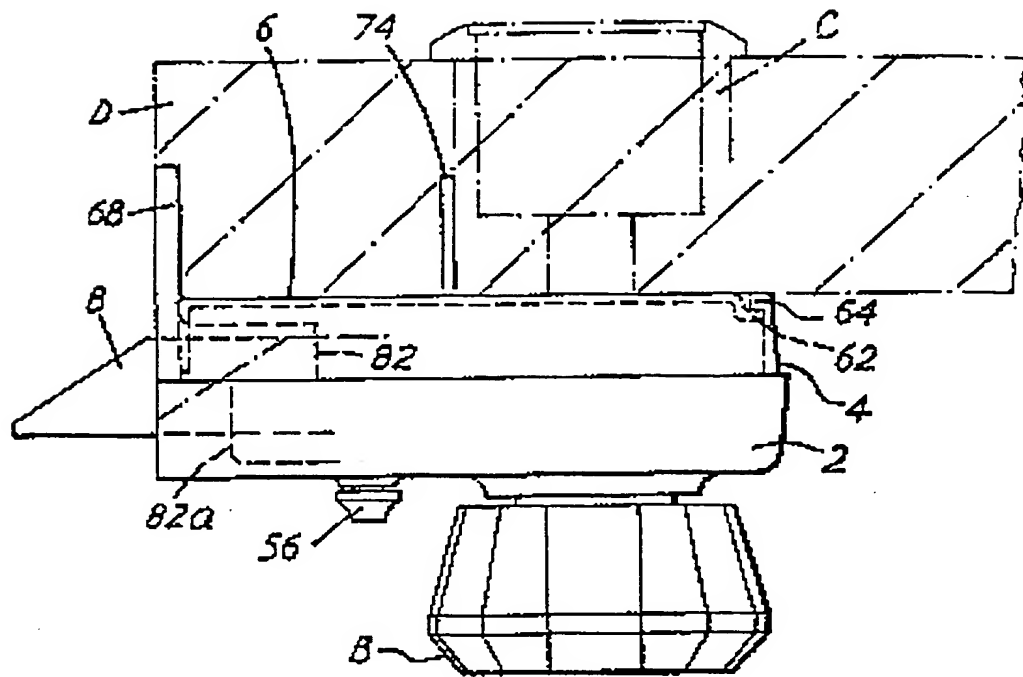


FIG. 1

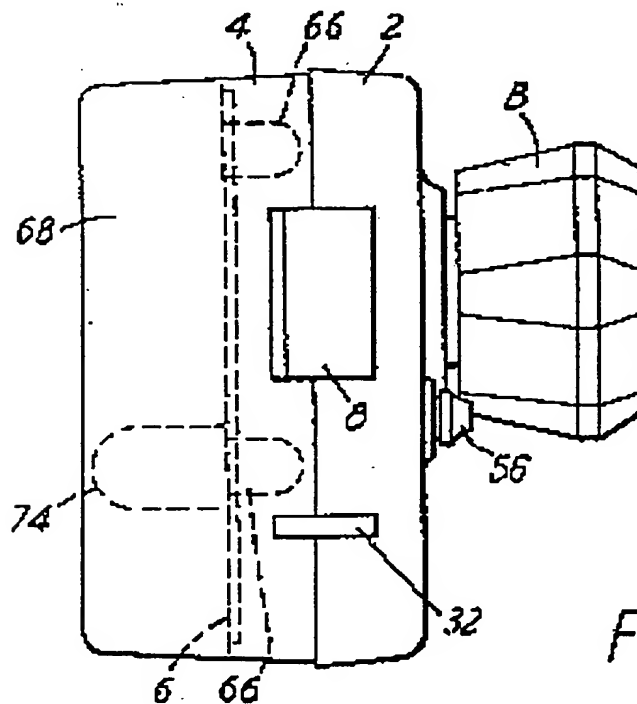
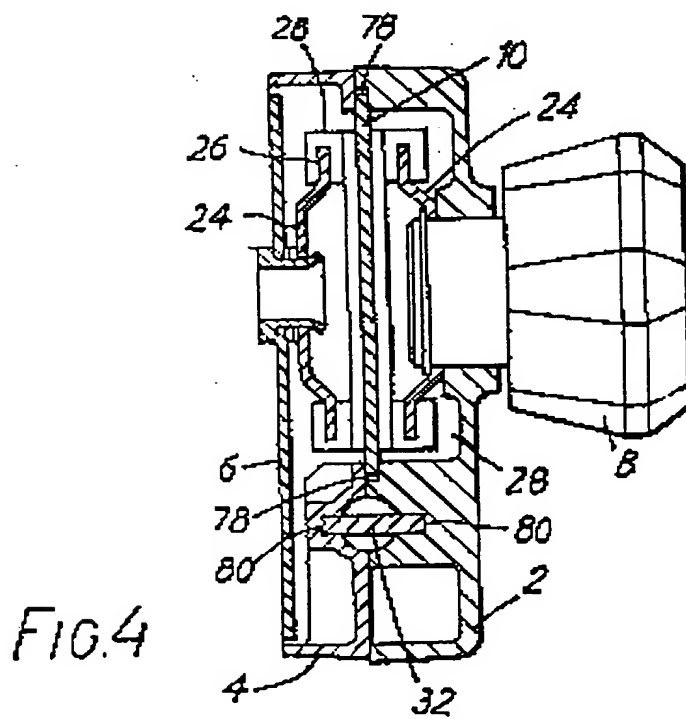
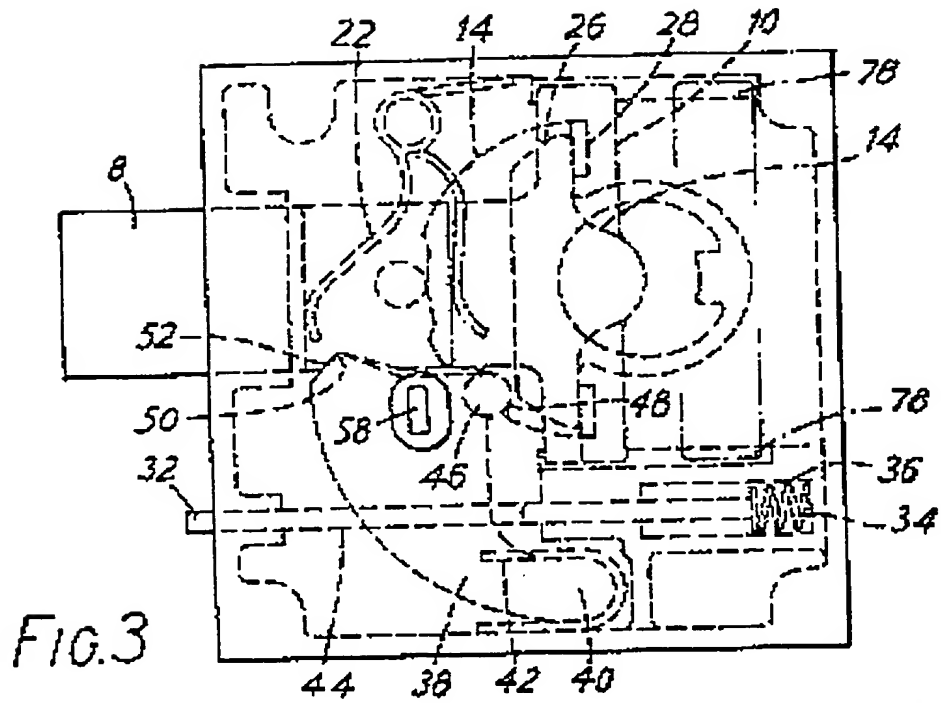


FIG. 2



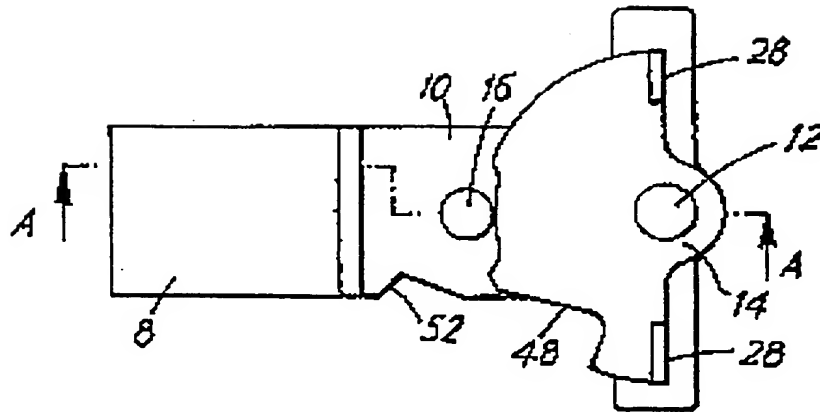


FIG. 5

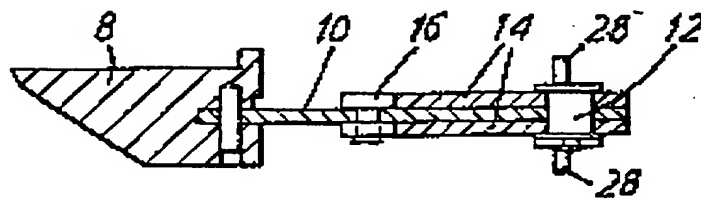


FIG. 6

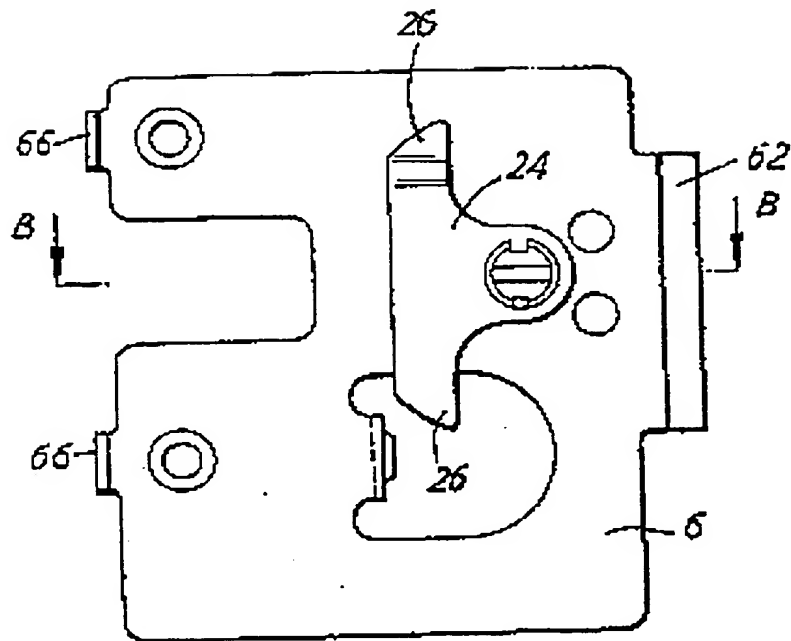


FIG. 7

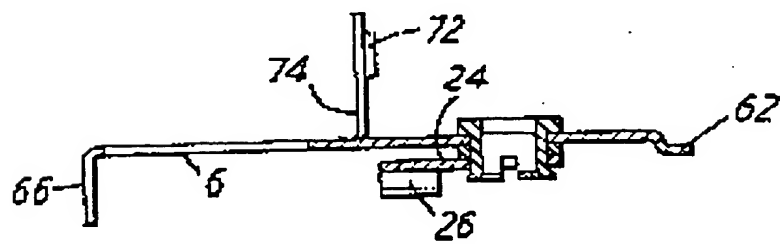


FIG. 8